

## ABSTRACT OF THE INVENTION

A device where the electrodes of an electroosmotic pump are located directly in the flow-producing region of the electroosmotic pump is described as well as methods of forming such a device. Placing the electrodes of an electroosmotic pump directly in the flow-producing region of the electroosmotic pump may increase the flow rate of a cooling fluid that is pumped through the pump. The cooling fluid may then remove a greater amount of heat from the substrate over which it is flowed. The substrate may be the non-device side of a die or a thermal management chip that is placed in direct contact with the non-device side of a die. In these instances the electroosmotic pump may be part of a microelectronic package containing the die or the thermal management chip.